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●251 243 [252] Corn is gathered in all stages of ripeness: the first edible ears are welcomed after the winter's dry provender. Green corn is boiled, made into bread, etc. Green corn may be partially roasted in the husk by placing it in a roasting pit over night. The husk is stripped off and the corn dried. Such ears are boiled during the winter, when they have the taste of fresh corn. When the the ears are ripe and hard the crop is gathered by the men and women who planted it, with the assistance of any one who is willing to help. A woman breaks off the ears as she walks along, throwing them into the burden basket on her back. The corn is spread to dry in the sun, either on the roofs of the rectangular shades, against which ladders conveniently lean, or on heaps of brush around which little smudges of dung are built to scare off rodents. Corn is placed in the stone storage chambers either in the form of husked ears or it is shelled and heaped in a corner. Seed corn is husked and placed in a separate pile in the storehouse. Pumpkin, squash, watermelon, and sunflower seed are selected for sweetness, dried, bundled in a cloth, and set to one side in the chamber. When going up to the plateau for the winter, two small sacks of corn are carried along: they return for more as it is needed. The corn may be stored in three chambers: that in the first is eaten during the winter, that of the second during the spring planting period, and of the third, only a little may be eaten, not all. "We don't eat it all: we don't plant it all." This remainder is saved against the contingency [734] of flood, etc.

Sinyella has five storehouses convenient to his fields; these were all emptied of the previous year's crop by the end of September. His family (p. 312) did not plant much this year as they have no women to grind their corn, so that only one storehouse will be filled. This is intended to supply himself, his four adult sons, and the five grandchildren. If this proves insufficient, more will be given them without compensation by West, his younger brother's son, who has plenty this season. Jess, who plants in his parents' field, stores his corn with theirs.

244 In former days two kinds of beans (*naddpi*) were raised, one a big red variety, the other yellow. These were planted in the cornfields on the same day as the corn, placed midway between the cornhills, 10–12 cm. deep, four to a hole. Both crops ripen at the same time. Surplus [251] beans are also stored in the stone chambers for winter food, leaving enough to plant in the spring.

Squash (*hawil'*) is planted like beans, at the same depth, four seeds to a hole. Two varieties were known in Sinyella's boyhood, one large and round, the other long. Squash ripens in October. It is brought home by burden baskets full and piled up. The rind is hacked off with a 251 knife and the squash set aside to dry somewhat. The stem end is cut

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away and the seeds scraped out and collected. After further drying, the flesh is sliced spirally from side to side, beginning at the stem end, in a strip 2.5 to 5 cm. in width. This coil, 1 to 1.5 m. long, is hung from a pole to dry in the sun. While it is still pliable, it is folded back and forth on itself into a bundle (*kamtekwi'lted*), 30 to 45 cm. long, and bound with one end of the strip. This is set aside to dry thoroughly before it is placed in the storehouse for winter use. Squash so dried will keep through an entire year. Melons are also grown.

Sunflowers (*dě'ěld*) are grown for their seed. Cotton (*Gossypium hopi* Lewton) is raised from seed obtained from the Hopi; the only use for this product is in the strike-a-light. The seeds of wild food plants are not planted; some, such as pigweed, grow in the fields. Peaches and figs, modern foodstuffs, are eaten fresh. Peaches are also torn in two and pitted, while figs are opened, before they are spread on the rocks to dry.

Two varieties of tobacco are known, *ěni*, and *kěkě'da,la'ni* (Coyote's tobacco; *Nicotiana trigonophylla* Dunal). Myth has it that the second was grown by Coyote for his own use. Both grow wild on the plateau and in the canyon above the village: their leaves are similar, but the smoke tastes somewhat differently, according to the natives. Tobacco (both varieties?) is grown only on the plateau. A mesquite tree is cut down and burned. The tobacco seeds are thrown into the dead ashes (the soil is not dug up). Willow is not used as a substitute.

Wild Food Products

These are a valuable adjunct to the food supply, especially from the autumn until spring during the residence on the plateau. During this period they lead a wandering life, families going off in the fall to a place where someone had reported pinon nuts lying plentifully on the ground; winter finds them to the east, hunting in the Cataract Basin, dropping down to the benches of the Grand Canyon in the spring for mescal, and so on. Women and children are sometimes left to gather seeds while the men go off to trade.

Mescal (the agave plant), which grows on the canyon benches, is ripe in May when the flower stalk is 30 to 60 cm. tall. The plant is severed entire by pounding a chisel-shaped buckthorn stick (*tdp'ě'l*) about 1 m. long, 3 cm. diameter, against its base. The outside leaves of the inverted plant are trimmed of their green portion with a special hatchet (*dgwěldjě*). This consists of a broad stone blade set in a slot midway in the length of a short handle, 30 cm. long, (sometimes of pinon wood), where it is held fast with glue or pitch and by lashings. A load of

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thirty or forty plants is carried home. A pit (*matpéma"a; dmdt*, ground) 1.5 m. in diameter, but of a lesser depth, is dug in sandy soil, not in gravel, else the steam would escape. Green or dry brush of any description is piled into the hole to the height of a meter above the ground; the uppermost brush must be dry. Stones the size of one's fist are spread over this to a depth of 10 cm. The pile is fired early in the morning, before sunrise. After three or four hours, when the wood is nearly consumed and the stones are red hot, several men (not women, because of danger from the flames) pound on the pile to reduce it level with the surface of the ground (?). Meanwhile women pile the mescal all around the pit to have it conveniently at hand. The pit is apportioned in sectors among several people; when the mescal is put in it, some plants are stood on edge to mark these divisions, the others are then packed indiscriminatingly in between. Long green grass, gathered by the women at the time the fire was started, is first carefully arranged over the plants, and then piled in to a depth of 5 cm. This is then covered with a layer of dirt, 15 cm. deep. It is now 8 or 9 a.m., depending on the quantity of plants. Forty-eight hours later the pit is opened, and grass spread over a convenient space to receive the roasted mescal.

Mescal paint (p. 197) is made from the dried juice which coats the stones. (The plants of the lowest layer have been burned black.) These stones are boiled for a few minutes to remove the sediment: the liquor is poured off and boiled until it thickens; then red paint is stirred in to thicken it further. After boiling longer the paint is reduced to a doughy consistency; the small quantity obtained is rolled into a ball.

The leaves of the roasted mescal may either be chewed at once to obtain the pulp and juice, or they may be mashed and spread in a thin layer on an arrow reed mat to dry. When half dried the fibrous layer is turned over to dry further. While it is still flexible, one edge is folded back and the opposite edge folded over to meet the crease. This preparation (*sio'l*) will keep indefinitely; it is soaked in cold water for an hour to make a sweet drink.

Arrow reed mats (*ilakwisi; ilé"*, arrow reed) measure 110 by 80 cm. and 75 by 50 cm., the first dimension being the length of the reeds. Thongs or sinews are twined through the reeds at half a dozen points. Mescal and yucca products, peaches and figs, are spread to dry on such mats.

The leaves of the young plantain (*'ak'Y'ai*) are boiled and served as we do cabbage.

The fruit (*Aatá'a*) of the prickly pear cactus (*ilidai*) ripens at the same time as peaches (September). The spiny fruits are broken off

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with tongs, rolled about on the ground with a bundle of brush, and finally rubbed individually with a rag to remove the spines completely. A burden basket full is carried home, the fruits opened and spread out to dry; sometimes the seeds are removed. When desired these are soaked for a few hours and squeezed to make a sweet decoction. 222 252 251

Mormon tea furnishes a drink: the stems are dried in bundles. [272]

Mesquite pods (*iyd'a*) are ripe at the end of September. There is but one way to prepare them. They are gathered when dry and pounded on the grinding slab. The excessively hard seeds are winnowed from the ground pod. The latter is stirred into cold water and allowed to stand for several hours. This drink is stirred before it is imbibed. The pods, being sweet when dry, are often chewed at odd times.

Yucca fruit (*dwâdô'l*) ripens on the plateau at the end of September. A layer of this is spread on a bed of dry sticks, a meter in diameter. The sticks are fired until the rind of the fruit is burned black, when they are removed with the tongs (*sdtdis'*), and thrown into a pile, on which water is sprinkled. The burned rind is removed, and the seeds, separated from the pulp, prepared by mashing with a mano. The flesh is spread to dry in a layer, 1 cm. thick, on a carpet of Mormon tea sprigs: this sheet is folded for storage. All drying fruits will spoil if exposed to rain. This preparation will keep for half a year. Bits of the sheet are broken off to eat dry, or they may be boiled.

A variety of seeds are gathered: a partial list includes pigweed (*dgwdsl*); goosefoot (*Ukrigdddj*); *sllt''l, gddi, t'êld* (all three unidentified); juniper berries (*dêjuqd*), and pinon nuts. Sprays of ripe pigweed and goosefoot are allowed to dry for a week; the seeds are then rubbed between the palms into a tray basket so that the seeds may be winnowed. These are roasted in the parching tray and ground. Half a kettle of water is brought nearly to a boil and the meal stirred in to make a mush. Pigweed leaves are boiled with salt, sometimes with cornmeal added, and eaten like cabbage.

Sllt''l grows only in open glades on the highest part of the plateau. The harvester walks along with a small burden basket in her left hand into which she raps the seeds with a seed beater (*sllt'dtwa; dtwa*, to beat), emptying the smaller into a larger burden basket on her back from time to time. The seeds are ground, although they are unripe, and stirred into boiling water to make a thin gruel. They are sometimes parched, ground, and eaten dry with bread. 222 252

The seed beater is used only in this connection. It is a flat scoop of wickerwork (*Fig. 3*). The warps are doubled at their midpoints: at 4/12 295

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Ears of green corn in their green husks are laid to roast on a small bed of coals, or buried in hot ashes, until the outer husks are thoroughly charred. The husks are stripped back, the ends of the cob trimmed clean, and the ears are tied in pairs by their husks to be hung up until some casual visitor comes by. Green corn is less commonly roasted in underground pits. The characteristic mode of eating corn on the ear is to break off the kernels with the thumb nail, catching them in the palm of the same hand. When the hand is full, these are poured off the side of the hand into the mouth.

Bread is made of green corn cut from the cob and ground. This pulp is moulded into cylindrical masses, wrapped in green cornhusks and baked in the ashes. When husks are removed the solid cakes may be eaten as bread.

For dumplings, cornmeal (*teyδ̌ǰδ̌ídeo*, corn, ground?) is kneaded into a stiff paste with hot salted water. The dough is rolled between the palms into cylinders, bits pinched off, and rolled into balls, 3 cm. in diameter. These are dropped into hot water and occasionally stirred while they boil a few minutes.

Wafer bread (*bóp*, from Hopi *piki*) of cornmeal is baked in the characteristic Pueblo fashion on a flat slab (*tδ̌eveha'ipδ̌δ̌íd*), a meter long and half as wide, supported over a fire. It is made either of white or blue corn, but never by mixing varieties.

Beans (*mδ̌δ̌ípd*) are parched before they are ground. Bean flour mush (*mδ̌δ̌ípδ̌δ̌éd*, beans, ground) is made by slowly stirring the flour, into water that has been brought nearly to the boiling point. When the mush boils, it is removed from the fire.

Sunflower seeds are parched and ground, when they may be eaten with the sweet mescal drink or a decoction of dried peaches. Sometimes they are parched, mixed with parched corn, and ground fine; then it is eaten dry by the pinch.

Squash is boiled. The dried stripe (*hawiδ̌δ̌ápd*) are broken into bits and boiled until soft (*hawiδ̌δ̌ádá*); this is sweet. The rind is sometimes hacked off fresh squash, and the fruit cut into small pieces, discarding the seeds, before it is boiled; this is not sweet.

Squash, melons, peaches, figs, and even corn are eaten as soon as they show the first signs of ripeness, so glad are the natives at the appearance of an edible green. Unripe fruits cut off before they reach maturity, as by a flood, are not discarded, but furnish at least something succulent to chew on.

Meat is sliced and cured by drying. It is usually necessary to pound it between two stones before it is cooked, and then it is commonly

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with heavy boughs still fully leafed, kept the interior cool. An open porch sheltered the doorway. When his wife wiped the soil from her hands and entered the house, I intended to follow, but hesitated as I caught the odor of cooking meat. It came from a lard pail, propped on stones over an outdoor fire. She turned and motioned for me to lift the lid; she was pleased that they had fresh meat, for it was far from plentiful. Curious to know what she was cooking for the family dinner, I uncovered the pail.

Two large glassy eyes stared at me from above the boiling water, and made the cooking rabbit seem alive. The hairy ears stood erect increasing the impression. The skinned body had been crammed into the bucket, but the head had refused to remain submerged. The lid dropped, clattering from my hand. Since then I have not cared to eat rabbit!

The interior of Chickapanyegi's house was arranged like all well-kept Havasupai homes: rolled bedding in the depressions in the floor where the family slept; personal possessions tied in a cloth and hung above the bed; and the inevitable pole, just below the ceiling, loaded with rabbit skin blankets, fiber mats, Navaho blankets and clothing not in use. Poles supported drying ears of corn and spirals of squash that brushed the head and shoulders as one moved about within the house.

I wanted next to see Gentle Annie's home. Her house would not be neat and spotless if Gentle Annie was the housekeeper. She was old and tired from the wars she had survived and the hardships life had dealt her. I found her standing at the door of her dome-shaped wickiup. Her wrinkled face and bright black eyes held friendliness. That may have been why she was known to Indians and to whites as Gentle Annie, the only name I ever heard for her.

A brand-new bedroom chamber, pink roses painted on its yellow side, stood on a box near by—filled with delicately browned navy beans.

With toil-worn hands Gentle Annie reached up to the lintel, took down a hard, dry slab about twelve inches wide by sixteen

Zellff Y-5 (ca. 1901) 1954 NT14 Plateau Yumans NT14
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574 262 long, folded back the cloth in which it was wrapped and breaking off a small chunk, handed it to me saying, "Eat!" How long it had lain there, growing harder and drier with age, I had no way of knowing, but to refuse her hospitality would give offense. I took a bite. At first it tasted like dried sweet potato, but the mass grew bigger and bigger until my mouth was full of coarse, hard fibers. I made an excuse for leaving, that I might get rid of it without hurting Gentle Annie's pride. I learned later that the Indians dried mescal in sheets and stored it as this slab had been stored, so I may have had my first and only taste of mescal.

343 251 When I arrived at Little Jim's home, his wife E-e was leaving to empty and clean her storehouse. I accompanied her for I wanted to learn more of their ancient and peculiar method of storing food. The small stone granary, with a round opening for the insertion or removal of food, was built in a crevice in the canyon wall. The hard stratum beneath made a solid floor that rodents could not penetrate. Neither could they work their way through the stone [333] walls, plastered with a hard cement of native manufacture from material available in the canyon. There was a never-ending fight against rodents. The numerous rats, mice and chipmunks, when winter reduced their food supply of growing plants, raided any storehouse into which they could gnaw their way.

423 343 251 The opening in E-e's storehouse was closed with a flat stone, sealed in place with cement in which the family's mark of identification had been placed. If anyone helped himself to her stores, a break in this seal would warn her of the theft. She dug away the mortar, set the stone aside, then lifted out the few stores that were left.

251 Crawling through the opening, she brushed up the floor, then began storing the food she had brought with her: ears of seed corn in one place; shelled corn in another; strings of dried squash and pumpkin necessitating special care to prevent spoilage, by themselves. With amusing gestures, when I failed to understand her native tongue, she showed me how she tied the dried seed of

Sulliff Y-5 (ca. 1901) 1954 NT14 Plateau Yumans NT14
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sunflowers, squash, melons and pumpkins in a cloth and packed them in this dry, safe place. 251

Through generations of experimenting the women had developed safe methods of preparing food for storage. Mold and decay must be fought or there would be famine. Beans, corn, sunflower seed, figs and peaches were dried in the usual manner, but it took an Indian's ingenuity to develop a method of drying squash and pumpkin so they would make good eating in the winter. The women first cut off the rind and allowed the squash or pumpkin to dry somewhat on the outside. They next removed the seeds, which were dried for food and for planting, then cleaned and partly dried the inside. This partly dried flesh was cut in one long spiral and hung over a pole until dry enough for storing. Many homes were so filled with drying spirals that there was little room for the family. The dried pumpkin or squash was cooked with water and served as a vegetable. I was sure it would be tender and sweet but I did not get a taste. [252]

I had seen peaches spread to dry on the sandy ground, fly-covered, dogs romping over them, ponies nibbling them. So when I saw two laughing gossiping women laying their halved peaches on the clean floor of a crevice in the canyon wall in which a family had set up housekeeping, I climbed up for a better view.

When I reached their level, to my surprise—and to his—I saw a naked old man sprawled on the floor, taking a sun bath. He gave me a startled glance, bounded up and scampered away among the rocks where he hid until I left the place. The women, their fat bodies shaking with laughter, jabbered and pointed. The old fellow would have thought nothing of his nudeness had a woman of the tribe appeared. It was the privilege of old men and young boys to follow the dictates of comfort in discarding clothes. But a white woman! He couldn't figure out what she might think, or say, or do. 887 291 576 522

I wanted a picture of the women and their drying peaches, so focused my camera. The women threw their *satams* over their heads and ran screaming to hide behind the rocks. It was the 114

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they had wood to sell. They needed the wild seeds, fruits and roots 221
that grew on top, they insisted. But, when I saw their childish delight as they made their departure, ponies loaded with cumbersome bundles, I knew that they were motivated by the very human desire for change, to get outside, where they could look about, with the full sweep of the vaulted sky above, with endless miles in which to wander.

Not an Indian who was physically able to ride but longed for this trip to the mesa. Only our policemen and the few persons needed to care for the sick and the aged stayed on through the winter.

It was a strange procession that finally departed up the trail. A single file of horses so encumbered by household equipment, clothing and food—all topped by a member of the family—that it looked like a train of bundles, walking off on four feet.

And what mysteries those bundles contained!

Near the village that fall I had watched a young woman glean 222
the ripe fruit from a sprawling bed of prickly pear cacti by catch- 262
ing the fruit between two gathering sticks, and with a quick twist break it free. After removing the spines by swishing the pear with a fiber brush, she tossed the clean pear into the burden basket on her back. At home any remaining spines would be wiped off [257]
before the fruit was split and laid in the sun to dry. She had approached her task fully prepared with gathering sticks, brush and burden basket. Tied in those huge bundles that obscured their ponies, I knew, were the crude, homemade tools they would use in gathering the many edible wild plants that grew up above.

The pigweed on the mesa should be a luscious bush loaded with small rich seeds. Its leaves, boiled, were eaten as a vegetable; the ripe seeds were toasted, ground and cooked into a mush. Mormon tea would be gathered, dried and stored to be brewed in a refreshing drink. The dry pods of the mesquite were sweet and nourishing; they were chewed for their food value or, reduced to a powder and mixed with water, used as a drink. Fall ripened the fruit of the yucca, which was an important food. After frost, the Indians

Bliff Y-S (ca. 1901) 1964 NT14 Plateau Yumans NT14
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from the agave, commonly called the mescal plant. Families worked in groups, first testing the plants for ripeness by thrusting a sharpened stick into their hearts. If they were soft and juicy, the harvest was on. With a wooden wedge the women pried the entire plant from the soil, cut away the outer leaves and tossed the fibrous pulp into their burden baskets. A large pit was dug, wood put in, set on fire and covered with stones. Someone accustomed to the task piled the hearts into the heated pit, using a cross layer to separate the mescal belonging to one family from that of another. These tasks were performed with high good humor. When the pit was filled to a depth of four or five feet, the mescal was covered with a layer of grass and leaves, on which dirt was piled to hold the heat. At the end of two days, the hearts were soft and brown. Each woman took her share, spread it on a wide stone surface, and pounded it into a thin sheet three feet wide and twice as long. This was quickly dried in the hot sun, then folded into a slab for convenient storing.

The mescal pit yielded the brown paint about which Carl had told me at Truxton. The stones on which the plants rested in the roasting pit were heavily coated with the burned juice. This was either scraped from the stones or soaked in water which was later evaporated by boiling. When the right consistency was reached, red mineral paint was added to thicken it to a putty-like substance of the desired shade for facial decoration.

My successor finally arrived. He was young, friendly, quick to co-operate, and his wife was charming. They were a bit shaken from the descent of the trail, and appalled at finding themselves in so deep a gorge, but quickly made their adjustment, and were eager to begin work. I remained for a few days to help them get acquainted with conditions and to check the government property, which I would turn over to him.

Again I fitted my things into the clumsy packsaddles, this time for the trip out. As I packed, the remark made by an Indian lad to a lazy boy who refused to work, ran through my mind: "Well, what are you going to do—just stand there and breathe?" With

4. Smithson E-9 (1951-1958) 1959 NT14 Plateau Tumaco NT14
Havasupai

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311
241
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Fig. 3. Havasupai fields and orchards in Cataract Canyon, looking northwest. Havasu Creek sweeps around the base of the Wescleve at left. The summit of the Redwall forms the Esplanade, a broad terrace, seen as center and right horizon. The Whitewall rises above the Esplanade at left. Caves or rock shelters formerly used by some families and rock structures used for food storage were located at top of steep talus at the base of the Redwall.

Among those tasks commonly allotted to women, child care and cooking were the two which occupied most of her waking hours. While child care was primarily a feminine responsibility, men shared or assisted in it when they were at home, as previously described. Cooking, on the other hand, usually was not a regular occupation of a man even on a part-time basis, except for those men who lived alone or had no woman in the household. However, if an old couple lived alone and the man were the more robust of the two, he did the cooking or assisted with it. Whenever the wife was absent or indisposed for a brief interval, it was not beneath her husband's dignity to cook, although he might choose to eat with a relative if his dependents were not too numerous. [462]

Women gathered wild plant foods within a short radius of camp, but trips of longer duration or greater distance were usually undertaken in company with their husbands who shared in the work. Gathering the pinyon harvest was a family project in which everyone worked and groups of families camped close together, making it a gala outing lasting two or three weeks. Each family moved from place to place until they judged their harvest adequate for their needs. [222] [476]

After the harvest of pinyons and other wild plants in which men helped, it was women's work to roast, husk, grind, and otherwise prepare the food for immediate use or storage. Likewise, women prepared for storage all foods harvested from the fields. Spier (personal communication, 1937) adds that men might also prepare food for storage, especially if they had no women to do it. [267]

Pottery was made by women, but its use was abandoned so long ago that the oldest living tribal members probably saw its manufacture only in early childhood if at all, and only a scant description could be obtained from informants. Location of clay deposits is still common knowledge, however, and one man pulled a sample of powder-smooth texture and almost white color from under the eaves of his house where it had been used for chinking. Clay deposits still exist in Cataract Canyon, notably near Navaho Falls and near the mouth of Ash Canyon, a tributary. Other clay deposits used are located on the plateau near Pine Spring and elsewhere. Clay was excavated either by women or men. [323] [317]

Basket weaving was exclusively woman's province, but basketry materials were sometimes gathered by men. [285]

The Havasupai did no beadwork or embroidery in early days. Twenty or 30 years ago several girls learned to do beadwork while in school at Fort Mohave, but few if any of them have used the technique in recent years. [326] [871]

Construction of houses and brush shelters used in summer is a family affair, and occasionally most of the community will join in building a house [342] [476]

252 Corn was also boiled or roasted in whole ears and eaten at once, or the
262 husks were pulled back to permit drying for storage.

[251] Squash was cooked, fresh or dried, in boiling water and usually was not combined with other foods. For storage, the squash rind was hacked off, and the meat was cut spirally in a long strip which was folded up loosely and tied to the house rafters or outside to dry. For use, dried strips were broken off and boiled in salted water.

Beans were prepared much the same as dried corn, either ground into flour and boiled as soup or mush, mixed with other ingredients, or boiled whole.

In a lengthy process, mescal was roasted in an earth pit with heated rocks and hot coals. Bread made from corn meal or the flour of wild seeds was also baked in a pit oven similar to, but smaller than, that used for [177] roasting mescal. The Havasupai formerly had no other form of oven, but today many families have wood-burning cooking stoves.

252 Another method of baking which Whiting (1951, 111) traces to Hopi con-
262 tact, was the use of a flat, smooth stone supported over a small fire by
177 several other stones turned on edge. The flat stone surface was greased with pumpkin seeds or suet, and a thin flour batter made from parched blue or white corn was spread over it. The bread cooked quickly, curling around the edges. It was peeled from the stone in sheets while still pliable and rolled up for storage. Whiting called this bread piki from Hopi piki, but this investigator recorded [illegible]. Only a few of the older women know how to make it. Informants referred to this baking method as "frying," possibly because a thin veneer of oil was applied to the baking slab, but Spier (personal communication, 1957) rightly points out that this is not true frying. He remarks further that, offhand, he was unable to recall any North American tribe which used frying aboriginally. Hopi and Zuni piki bread is baked rather than fried.

252 The most popular bread eaten today is the tortilla made from wheat
262 flour, salt, and water, usually with baking powder added. It is baked on a wire rack over an open fire reduced to coals, although in cold weather it may be cooked on an inside stove with or without grease. Tortillas are the mainstay of daily fare, usually being baked fresh every meal. Small pieces torn from them are often used in lieu of a spoon to carry softer food to the mouth.

Cornbread, made from green or dried corn and baked in a wood-burning stove or wrapped in husks and baked in an earth pit, continues in popularity. Sometimes wheat flour is added to it.

Various butters were made from pinyon nut meats, parched sunflower, watermelon, or pumpkin seeds, or seeds of certain wild plants. These are

compared to peanut butter in consistency, but each seed had an individual flavor. Parching was accomplished by putting hot coals in a tray with unshelled pinyon nuts, corn, or seeds and shaking vigorously to prevent burning. Pinyon nuts were shelled on a metate and tossed in a winnowing tray while the shells were blown away. Pinyon nut butter was sometimes mixed with roasted dried cornmeal to make a thicker paste. Young people compare pinyon nut butter unfavorably with peanut butter, because it was drier and always had tiny shell fragments in it. 252 262

Drinks were prepared from peaches and other fruits which were cooked until pulpy, thinned with water, and sweetened after sugar was available. A refreshing drink was made from mesquite beans pounded gently on the metate to break up pulp membranes but not the seeds. The mashed beans were soaked but not cooked, and the pulpy substance was squeezed out before use. 272 262

Meat was boiled fresh or dried, roasted in a pit, or broiled over an open fire. Pit roasting was the favored method for most game because natural juices and more flavor were retained. Certain small animals such as the rabbit were boiled, the water sometimes being thickened with corn or bean flour. 252 262

Fruits were eaten in season fresh or occasionally stewed. For storage, berries were dried whole, and larger fruits, to speed the drying process, were split open and pitted. Figs and the pulpy fruits of prickly pear, mesquite, and roasted mescal were mashed on the metate and kneaded into flat cakes for drying. One woman observed preparing to dry what she called fig bars, rolled up pulp into figure eights, then flattened them gently to close the holes. 251

Fruits are hung outside until cold weather, then stored inside the houses. The storage cists located along the talus slope throughout the canyon are no longer used, but a few families continue to use the shelf of the talus slope, in favorable locations, for drying fruit. [343]

Several younger women today process a small amount of fruit in jars. [177]

175 boundary in 1882 the Government took no active interest in the Havasupai. In 1908 a government farmer was sent to instruct them in better methods of farming and the use of metal implements.

439 For many years the Havasupai have carried on an inter-tribal trade with the Navaho and Hopi, obtaining blankets, wool, and silver work in exchange for dressed skins, and agricultural products. The Hualapai on the west trade many of their raw deer hides to the Havasupai in exchange for the Navaho and Hopi goods in addition to fruit and vegetables.

ECONOMICS

242 The present Havasupai food supply is based principally on agricultural products and meat. Corn, beans, and squash are the staples, supplemented by onions, tomatoes, melons, and other garden vegetables. Beans are of two kinds, navy and pinto—the latter a red spotted bean. The fruit crops are peaches, nectarines, apricots, and figs. [75] Peaches are said to have been introduced by John D. Lee, a Mormon, [77] who lived as a fugitive among these people for several years following 1857. Most in the early days was obtained by hunting, but today most 253 of it is from their herds of range cattle.

502 The economic unit is the household, usually consisting of parents, children, and unattached close relatives. These small groups are closely bound into large ones by blood ties. This grouping is based on, or at least correlated, with the inheritance of land on the one hand [525] and the temporary matrilocal residence on the other. Sometimes several [97] generations of these people live close together and work together, but each married couple and the progeny are regarded as a distinct [57] unit. Some young couples build a home soon after they marry, but it is customary for them to live with the wife's parents until they have a home of their own.

428 Property descends through the male line. If a man dies his effects do not descend to his wife but to his sons. The sons may hold land or stock undivided for years until they have families of their own whose diverse interests make division necessary. The widow and unmarried daughters do share in the use of the land; but they cannot [748] lay claim to it, since the widow's relatives and the daughter's children never inherit it from them. If a widow hastily re-marries, her "use" interest is lost, reverting to the other heirs. Should there be no direct heirs, the property goes to the dead man's brothers or their male descendants.

423 When not living out of the canyon in the winter, the Indians live in a section of the canyon not much more than a mile in length. Ownership of the arable land is communal. Every family has a piece of land, which is recognized as belonging to it by the rest of the tribe. By established custom the land is inherited and may be sold to a fellow tribesman. One peculiar condition that caused some trouble in the past was the ownership by one Havasupai of fruit trees growing on the lands in possession of another, brought about, it was reported, by certain complications in inheritance.

432 A short distance above Supai village Walapai Canyon branches off to the west. In the upper end is grazed a herd of individually owned cattle. The men visit the herd occasionally to bring in a beef to the [433] settlement. The meat of the animal is sold or traded and is eaten in 281 a day or two, there being no means of keeping meat other than as jerky.

Horses and cattle are owned and herded by the men alone. The men are also the owners of the house and land on which it stands. Property, such as a man's tools, buckskins, weapons, saddle, and perhaps a charm and a mask; a woman's field tools, baskets, cooking uten-

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sils, and blankets is owned individually. Each one can dispose of his 422
possessions independently.

The Havasupai is an excellent horseman and packer. He usually 492
has quite a number of horses and does considerable packing on the trail with them. Traveling up and down the steep winding trail to the top of the canyon is very strenuous work for the horses and the Indian must have a sufficient number of them so as to rest each horse for a few days after one of the trips.

When first visited by the white man these people dug holes with 241
stone hoes, planted their seeds, but did little cultivating. Only a small acreage was planted, this being irrigated from small ditches running [3-4]
from dams of rock, logs, and willows piled in the river. Methods of farming are still simple. The ground is first plowed and then cultivation is done with a hoe; some rotation of crops is practiced from year to year. Irrigation ditches now serve over a hundred acres of land.

The Havasupai are among the most contentious farmers in the Southwest. Their interest centers so firmly in their fields that when re- [3-6]
munerative employment is to be had at Grand Canyon the men will leave the work with semi-monthly pay to plant and tend their crops. Planting begins in the middle of April, but previously the fields are cleared of weeds and brush, plowed with a one horse walking plow, and irrigated two or three days before planting.

The tools used are a planting stick about an inch wide and a foot 241
and a half long with one end cut wedge-shaped, and a modern hoe with 412
a blade at an angle to the handle. Formerly a wooden spade-shaped hoe with an extra long handle was used; also, the shoulder blade of a [3-7]
horse was held in the hands and used to scrape the sand out of irrigating ditches and for scraping out weeds.

Planting is an occupation that most of the family takes part in; 241
even the small children help dig holes. The corn is not planted deep, about three and one-half inches is the usual depth. The lines for the rows of hills are generally drawn with the foot. Kneeling, the first hole is dug with the planting stick; the soil is loosened, and eight or ten seeds dropped in. However, before putting the kernels in the first hole the planter says a prayer. Filling the hole, he takes two or three short steps forward, kneels, digs a second hole, and plants. This he continues until the field is planted.

The planting is not all done at one time but extends over a period of two months. Beans are planted on the same day as corn and placed half way between the corn hills. Both crops ripen about the same time.

When the young corn shoots are about two inches above the ground, they are given a second watering. When the tassels appear, about two and a half months after planting, the corn receives a third and last watering. The fields are weeded at regular intervals and traps are placed for rodents which would otherwise destroy a portion of the crops.

The Havasupai plant a small variety of corn, with ears about six [3-7]
inches long, known as Mohave corn, which will yield ears in about two months. Other varieties ripen at intervals from mid-August until the last of September. When the ears are ripe, they are gathered in burden baskets. The gatherer breaks off the ears and throws them in the basket on his back while he walks along. The corn is dried on the 451
roofs or on brush heaps. It may be placed in the storage chambers either in the form of husked ears or shelled and piled in a corner. Seed corn is always husked and heaped in a separate pile in a corner. Watermelon, pumpkin, sunflower, and squash seeds are dried, put in cloth sacks and stored in the storage chambers. Beans and corn ripen at the same time and those beans not eaten green are dried and stored in stone chambers for winter use.

The Havasupai have innumerable ways of preparing corn. Only 252

few are given here. Green corn is usually shelled or cut from the cob and mashed to a pulp on the grinding stone. Water is heated to almost boiling, the corn slowly added, and the mixture stirred with a stick while the pot remains on the fire. When it comes to a boil, it is set aside to cool. Green corn in the husks is roasted on a bed of coals or buried in hot ashes until the outer husks are charred. The husks are then pulled back and the ears tied in pairs by their husks and hung up until some relatives or friends come calling. The usual way of eating corn on the ear is to break off the kernels with the thumb nail, catching them in the palm of the same hand. A handful is poured into the mouth at a time. Often the pulp of green corn is shaped into balls, wrapped in husks, and baked in hot embers. When the husks are removed the balls are eaten as bread. Green corn is sometimes cut from the cob, crushed, and boiled with unripe pumpkin cut in small pieces. A favorite sweet dish is made by boiling squash blossoms until tender, then mashing them to a pulp on the grinding stones. Meanwhile green corn, cut from the cob, is cooking in a pot over a slow fire. The pulp is added to the corn and boiled until thick.

Squash does not ripen until October. It is gathered in burden baskets, brought home and piled up. Later the rind is cut off and the seeds and center pulp scraped out. The flesh is cut out in strips and hung in the sun to dry. While still pliable it is made into bundles and dried thoroughly before it is stored for winter use. Squash prepared in this manner will keep indefinitely.

Fruit raised by the Havasupai is well known for its fine flavor. The women halve the ripe peaches and lay them out on the roofs or rocks to sun dry and then store them away for winter use. Figs are also dried. Some of the fruit is ground on the *metate*, pressed into large cakes and packed away.

Much of the beef and game is roasted and boiled while fresh, but often it is dried to preserve it. The meat is cut in long thin strips and hung in the sun to dry. It is generally necessary to pound this jerky with a pestle before it is cooked and then it is commonly stewed with dried squash or corn. Bean flour also may be added to thicken the stew.

In addition to the cultivated crops, the Havasupai gather several wild plants which are a valuable adjunct to the food supply during the winter residence on the plateau. The pinon nut forms an important part of their diet. In good years these nuts are gathered in large quantities during the fall and winter months by the women and children on the land high above the canyon. Some of the nuts are ground on the *metate* into a paste resembling peanut butter.

A drink is made of dried mesquite pods. The pods are crushed on the grinding slab, stirred into water, and the mixture allowed to stand several hours, after which the drink is ready for use. A variety of seeds—pigweed, goosefoot, and numerous others, are gathered and utilized in various ways. Some are roasted on parching trays and ground and the meal added to boiling water and made into mush. Pigweed leaves are boiled in salted water and eaten like spi[illegible]; sometimes corn meal is added.

The mescal (the agave plant) is considered at the right stage for eating when the flower stalk, which shoots out from the center of the plant, is a few inches high. The plant is severed by pounding a chisel-shaped buckthorn stick or stone axe against its base. The outer leaves of the inverted plant are trimmed of their green portion with a hatchet or butcher knife. A party of several families goes out and gathers mescal and brings it to the place where it is to be cooked. A pit which may vary in size but usually is about three feet in diameter and one and a half feet deep is dug in sandy soil, not in gravel because the steam would escape. Wood and brush are piled into the hollow to the height of a foot or more above the ground. Stones the size of a man's

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fat are spread over this to a depth of about five inches. A fire is then built and allowed to burn until the wood is nearly consumed and the stones are red hot. Several men pound on the pile to reduce it to about ten inches below the surface of the ground. The women have the mescal piled around the pit conveniently at hand. The pit is divided in sections among several families; when the mescal is put in it, some plants are placed on edge to mark these divisions; the others are packed in between. The mescal is covered with grass, canvas, or gunny sacks—and over the top a layer of wet sand is thrown. Forty-eight hours is the usual time required for roasting mescal. Occasionally some of it is dried and ground into a meal from which several dishes are prepared.

The fruit of the prickly pear cactus ripens in September and is gathered in great quantities. The fruit is broken off with tongs, rolled in the sand with a brush of twigs, and finally rubbed with a piece of cloth to remove the spines completely. Basketsful are carried home, the fruits opened and spread on arrow-weed mats to dry in the sun.

The fruit of the yucca ripens in September and is found in abundance on the land above the canyon. A layer of this is arranged on a bed of dry sticks, about three feet in diameter. The sticks are fired until the rind of the fruit is burned black, then [illegible] removed, thrown into a pile, and sprinkled with water. The burned rind is removed and the seeds separated from the pulp. The pulp is spread to dry on a layer of grass or Mormon Tea sprigs. The dried yucca sheet is folded and stored. Pieces are broken off and eaten dry or they may be cooked.

The Havasupai women take pride in their hair, washing it weekly in a yucca suds—a soap substitute made from the roots of the narrow leaved yucca pounded into a pulpy mass and dried. After being thus washed, the hair is soft and glossy.

The Havasupai house *(kowa)* cannot be classed as either a wikiup or hogan. Some are built of willow brush, conical shaped like a tepee; others are constructed like a tent with horizontal ridge pole at the top and a few are built with straight brush walls and a flat roof covered with dirt and thatch. Floors are of dirt and are not treated in any way. The loose sand and trash that accumulates is swept back from the center of the house against the walls and after a time the structure appears to cover a slight depression. Saddles, hides, and other possessions are pushed into corners. Many of the belongings are stored in paper cartons and lug boxes. The cooking is done on a wood burning stove or open fireplace in the middle of the floor, the smoke escaping through a hole in the roof. Living in their remote canyon where everything has to be packed in on horses over a steep winding trail, the Havasupai have few modern household goods.

At night, blankets or small thin mattresses are spread on the ground to provide beds. In the morning, all the bedding is rolled like a cowboy's bed roll and piled along the wall. A few families own modern beds, but the ground is generally used. Beds are usually placed with the head to the east; in this position the sleeper will be free from troublesome dreams, will rest well, and arise refreshed.

Some years ago the government built for the Havasupai a number of two-room frame cottages, but the Havasupai would not give up their old ways. They stored their farm tools, melons, squash, and other supplies in the frame houses and continued to live in thatched houses close by. Today most of these houses are occupied by the Indians at least a part of the year, but some claim the government built houses are too hot in summer and too cold in winter.

The construction of these houses probably has had something to do with the diminishing custom of storing surplus food supplies in cavities in the rock high up on the canyon wall. In olden times each family had its own storage chamber which was sealed up with rocks and mud

12: Cushing E-6 (181) 1883
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304 In the pulling out of the beard, although
302 whiskers are sometimes permitted to grow in front of the ears; beside occasional mustaches, fast goatees are affected by the young. Scarifications, for ornaments, are not unknown.

516 The women, both old and young, are remarkably careless of personal cleanliness and appearance, nor are the older men superior to them with reference to cleanliness. The young men, however, are noticeably neat in the care of their persons, frequently bathing in the river, and careful of their toilet and dress.

241 I have mentioned the things which are cultivated by the Ha-va-su-pai. On these, as on various roots, wild plants, and fruits, they depend for their vege-
252 table food. Green corn is variously
262 prepared: it is roasted, or boiled in the ear; or cut up and cooked with beans, bits of deer meat, etc., it forms the succotash of the more eastern tribes, and
[512] of historic celebrity. Crushed on a metate with a little flat grinding-stone or muller, together with green squashes, so as to form a pulp, it is then boiled, when it becomes gelatinous, resembling the *poi* of the Sandwich Islanders. Like it, also, it is eaten with the two fingers. Sunflower seeds, roasted by being shaken together with live coals in an earth-covered basket tray, then ground, formed into patty-cakes, and slightly baked in the ashes, are eaten as a relish with these and other dishes, in the absence of meat. Indeed, this curious sunflower food takes the place, to a great extent, of meat during the summer months.

● 251 The corn, while still green, is sometimes prepared for storage, by being roasted, husks and all, in hot sand, while the ripened corn is merely dried on the ear. Food is made of the latter, either
252 by simply parching, or by grinding into meal. The meal, coarse or fine, is then used for cakes, mushes, or batters, and cakes, thick or thin, and of many varieties and degrees of wholesomeness.
[262] Melons, pumpkins, peaches, and apricots

[P-549 A]

262 252 are all eaten raw, or dried, and prepared for food by stewing. Squashes are either boiled or roasted, the latter most skillfully, the seeds being carefully preserved, dried, and made into food, much the same as the sunflower seeds.

263 A remarkable and at first unpleasant characteristic of all these foods is the absence of salt from them. Sometimes the corn preparations are sweetened by chewing and fermentation. The somewhat sweet fruit of the datila, or Spanish bayonet, is rendered sweeter by a like process, the pulp thus formed being [251] spread out on large, closely-woven splint screens, and dried in sheets, often several feet in extent, though less than half an inch in thickness. The mescal of the 252 more southern tribes, the ak-ia of the Zuñis, is prepared in its greatest perfection by the Ha-va-su-pai from the heart and inner leaves of the agave, or century plant. It is gathered by the women in great quantities throughout the gorges and upon the terraces of the cañon, and [482] transported in large baskets, strapped across their foreheads, to the gravelly beds of dry streams. Pits being dug in the gravel and fuel collected by the men, huge fires are built in the excavations, and kept burning for several hours. The embers are then drawn forth, the pits lined with leaves and grasses, and the agave thrown in, a layer like the lining then being added, and the heated gravel and embers heaped above. These [527] burnings are occasions of great festivity and merry-making. When taken out, the agave is easily made into pulp, and dried, either on the flat rock surfaces or as is the fruit of the datila.

221 262 It is a remarkable fact that the Ha-va-su-pai, possessing neither cattle nor sheep, are almost exclusively vegetarians during the summer months. With the beginning of winter, however, the tribe, almost as a unit, repairs to the surrounding plains, where they subsist 262 chiefly on the flesh of the game they kill. This is made ready for consump-

[P 549B]

/99 cont./
131 inaccessibility of their cañon home has tended to keep them
177 immune from outside influences, so that in many ways their
342 life is still delightfully primitive. Their typical dwelling consists of a framework covered with brush or tule and sometimes with an outer covering of earth. In summer a four-post brush shelter is erected, which affords protection from the sun and allows free circulation of air.

262 The agave plant, cut and prepared in much the same way as by the Apache, has always been an important article of food among these people. Other native vegetal foods are grass seeds
224 and piñon nuts. From time immemorial the Havasupai have
(221) been hunters. On the approach of winter they left the cañon for the upper levels, built wickiups of boughs and bark, and spent the cold season in hunting. Deer were the principal game, although they killed some mountain sheep and an occasional black
(251) bear. Much of the venison was cut in thin strips and dried for
237 summer use. Deerskin dressed by the Havasupai was considered
291 the best by all neighboring tribes; consequently, it not only
(439) furnished clothing, but was an important medium of barter. But
177 the life of the Havasupai has changed. Game is scarce, and
224 the Government does not willingly grant them permission to
648 hunt on the surrounding mesas, hence there is little wonder that the wrinkled veterans long for the old days when game was plentiful and they hunted where they would. "Now all is changed," they say. "We cannot go out of the cañon without asking the white man. We dare not hunt deer, as the game must be saved for the Háiko. We are no longer men; we are like little children; we must always ask Washington!"

291 Corn is now their chief staple, besides which they raise
262 beans, squashes, melons, pumpkins, sunflowers, peaches, apricots,
17/ and figs. They prepare corn in countless ways, corresponding
252 largely to those of the Hopi. In fact, the modes of preparing corn by all tribes of /100/ the Southwest are much the same. Much of the crop is allowed to ripen on the stalk; this is later ground into meal on the metate. Quantities of green corn are harvested, roasted in large pits with the husks on, and hung to dry. This may be ground or simply shelled and cooked, either alone or with beans, meat, and dried squash. Like the figs, their

/100 cont./ LIKE THE PIGS, THEIR
177 peaches and apricots were derived from the whites, but so long
245 ago that they are now regarded as native.

291 The aboriginal dress of the Havasupai was simple and rather distinctive. The one arbitrary garment for the men was, of course, the breech-cloth, all additions to which were an
[554] evidence of wealth and position. For the Havasupai shirt the foundation was a large deerskin with a hole cut in the middle, like a poncho. This was loosely fastened together at the sides and held close to the body with a belt. Stitched to it were loose, baggy sleeves, open under the arms as far as the elbows. Shoulder, sleeve, and side seams were freely decorated with deerskin fringe. The leggings, close fitting and fringed at the sides, reached to the hips and were met below with high-topped moccasins. A full suit required five good-sized deerskins. The
[302] men tied their long hair in a knot at the back of the head and cut the fore part in a low bang over the eyes. The principal garment of the women, which reached a little below the knees, consisted of two deerskins sewn together at the top and sides and with openings left for head and arms. It was liberally ornamented with fringe, worn sleeveless, and belted at the waist. Their boot-legged moccasins reached to the knees. The hair, cut in a
[302] bang over the eyes, hung loose and unkempt.

285 The arts of the Havasupai are seen at their best in the
[439] basketry. Many of their tray-shaped baskets are used for barter with neighboring tribes, who know them as "Coconino." The
[415] same form, coated with earth, is used as a cooking utensil,
[251] water being boiled in them by the use of heated stones; the water bottle also is of basket-work, coated with piñon gum. A
482 coarsely woven, cone-shaped burden /101/ basket is carried on the back, supported by a strap passing across the forehead.
321 Spoons and small utensils were formerly made from mountain-
415 sheep horn.

622 Chieftainship is hereditary, the voice of the tribe determining which of the male relatives of the last incumbent is best fitted to rule. The present chief is Wimái, who succeeded Kóhat, familiarly known as "Navaho." Kóhat was considered by all who knew him to be a man of unusual strength of character, broad,